(a) an alphavirus replicon RNA, wherein the alphavirus is selected from the group consisting of Sindbis virus and Semliki Forest virus; wherein the replicon RNA comprises the alphavirus packaging signal, a heterologous RNA sequence, and a sequence encoding at least one of the alphavirus structural proteins, wherein the replicon RNA furthermore lacks a sequence encoding at least one of the alphavirus structural proteins; and

D2 cont'd

(b) at least one separate helper RNA encoding the structural protein(s) absent from the replicon RNA, said helper RNA(s) lacking the alphavirus packaging signal;

wherein the combined expression of the replicon RNA and the helper RNA(s) produces an assembled alphavirus particle which comprises a heterologous RNA sequence, is able to infect a cell, and is unable to complete viral replication in the absence of helper RNA due to the absence of the structural protein coding sequence in the packaged replicon, wherein said replicon RNA encodes the alphavirus capsid protein, and wherein said at least one separate helper RNA(s) encodes the alphavirus E1 glycoprotein and the alphavirus E2 glycoprotein.

51. (Amended) A method of making infectious, defective, alphavirus particles, comprising:

providing a helper cell according to claim 43;

D3

producing said alphavirus particles in said helper cell; and

collecting said alphavirus particles from said cell, wherein said alphavirus replicon RNA and said at least one separate helper RNA are introduced into said helper cell by electroporation.

52. (Amended) Infectious alphavirus particles produced by the method of claim 51.

D4

63. (Amended) A helper cell for producing an infectious, defective alphavirus particle, comprising, in an alphavirus-permissive cell:

(a) an alphavirus replicon RNA, wherein the alphavirus is selected from the group consisting of Sindbis virus and Semliki Forest virus; wherein the replicon RNA comprises the alphavirus packaging signal, a heterologous RNA sequence, and a sequence encoding at least one of the alphavirus structural proteins, wherein the replicon RNA furthermore lacks a sequence encoding at least one of the alphavirus structural proteins; and

(b) a helper RNA system comprising helper RNAs encoding the structural protein(s) whose transcripts are absent from or otherwise not functional in the replicon RNA, each of said helper RNA(s) lacking any alphavirus packaging signal;

Dft (cont.)

wherein the combined expression of the replicon RNA and the helper RNA(s) produces an assembled alphavirus particle which comprises a heterologous RNA sequence, is able to infect a cell, and is unable to complete viral replication in the absence of helper RNA due to the absence of at least one structural protein coding sequence in the packaged replicon.